MASTER

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CASIO

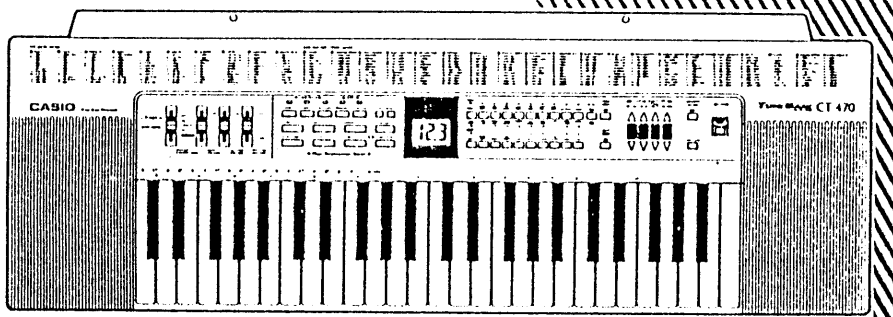
TONE BANK KEYBOARDS

CT-470 | 670

ELECTRONIC MUSICAL INSTRUMENT
INSTRUMENTO MUSICAL ELECTRONIC

OPERATION MANUAL 2

MANUAL DE OPERACION 34



TONE BANK KEYBOARD CT-470

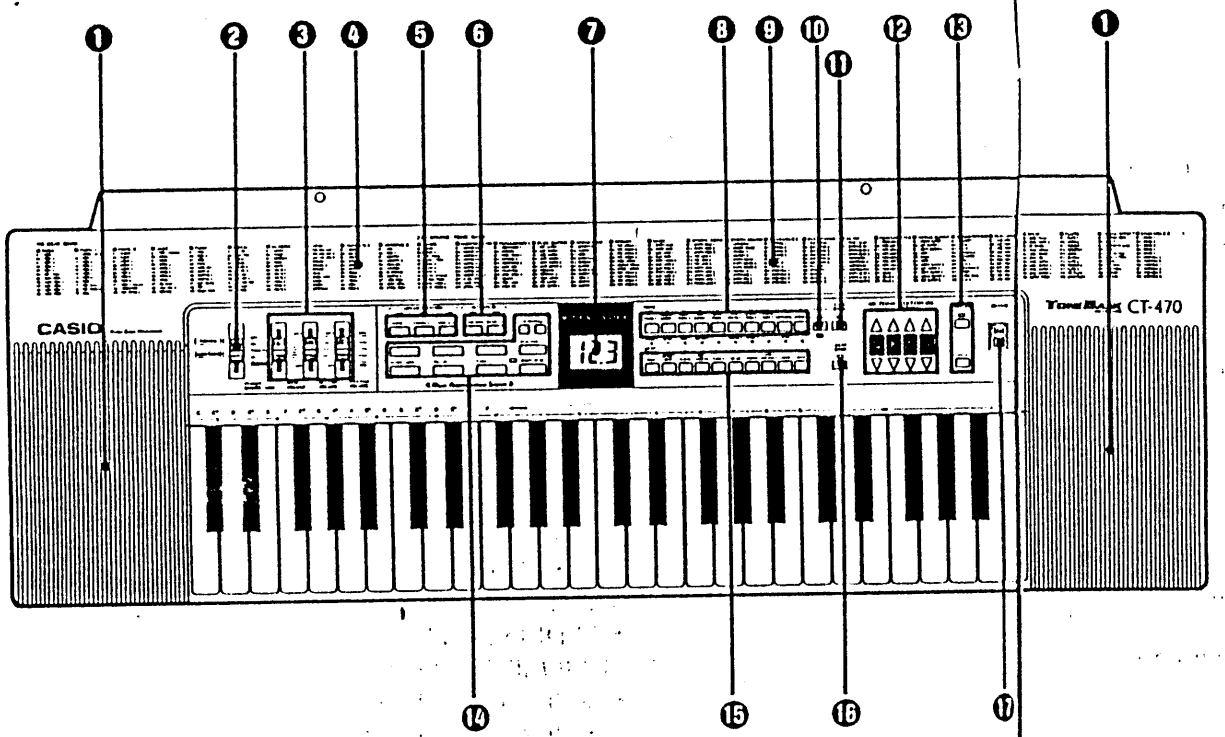
ELECTRONIC MUSICAL INSTRUMENT

Contents

1. General Guide 4
   - Demonstration tune 5
2. Power Supply 6
   - DC power 6
   - AC power 7
3. General Operations 8
   - Getting started 8
   - Volume sliders 8
   - Pitch bender 8
   - Tuning control 8
4. Preset Tones (220-SOUND TONE BANK) 9
   - Selecting a basic tone 9
   - Selecting a BANK sound 9
   - Keyboard split tones 11
5. Auto-Rhythms (110 BEAT BANK) 12
   - Selecting a basic rhythm 12
   - Selecting a BANK rhythm 12
   - Playing an auto-rhythm 14
6. Multi-accompaniment System 15
   - Accompaniment keyboard 15
   - Playing an accompaniment using CASIO CHORD 15
   - Playing an accompaniment using FINGERED CHORD 16
   - Using the MUSICAL CONTROLLER buttons 17
   - Using the ORCHESTRATION buttons 18
   - Using the INTERPLAY buttons 19

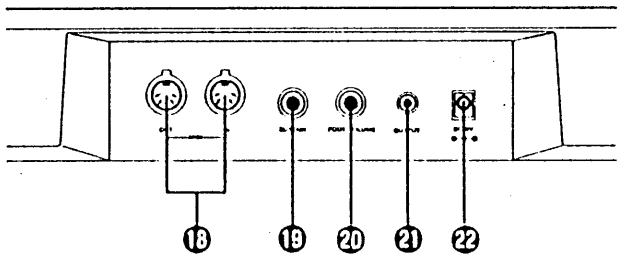
7. Tone Editor 20
   - Using the TONE EDITOR buttons 20
8. Performance Memory Function 21
   - Recording 21
   - Playing back memory contents 22
9. MIDI Functions 23
   - What is MIDI? 23
     - MIDI terminal functions 23
   - CT-470 MIDI settings 23
     - Setting the MIDI mode 23
     - Setting the MIDI channel 24
     - Assigning preset tones to MIDI channels (MODE B) 25
     - Setting the MIDI clock (internal/external) 25
     - Setting the volume in the MIDI mode 25
   - CT-470 MIDI applications 26
     - Connecting to another MIDI keyboard 26
     - Use as multi-timbral sound source 26
   - Technical reference 28
     - Program change reference 28
     - Polyphony reference 29
10. Troubleshooting 30
11. Care of Your Keyboard 31
12. Specifications 32

1 General Guide



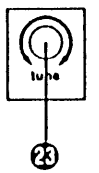
❶ Built-in speakers
❷ POWER/CHORD/MIDI selector
❸ VOLUME sliders
❹ 110 BEAT BANK list
❺ ORCHESTRATION buttons
❻ INTERPLAY buttons
❼ 3-digit display
❽ TONE selectors
❾ 220 TONE BANK list
❿ TONE SELECT button
⓫ TONE BANK button
⓬ TONE EDITOR buttons
⓭ MEMORY buttons
⓮ MUSICAL CONTROLLER buttons
⓯ BEAT selectors
⓰ BEAT BANK button
⓱ DEMO button

<Rear panel>



⓲ MIDI terminals (IN/OUT)
⓳ Sustain jack
⓴ Foot Volume jack
㉑ Headphones jack
㉒ AC adaptor jack

<Bottom panel>



㉓ Tuning control

Demonstration Tune

This unit features a preset demonstration tune which has been carefully programmed to showcase all the features and benefits of this unit. Simply press the DEMO button ⓱, and listen to the CT-470 play.

- *The demonstration tune is played in an endless loop. Press the DEMO button again to stop the tune.*
- *The keyboard is inoperable while playing the demonstration tune.*

2 Power Supply

This unit operates on both AC and DC power.

■ DC Power

♦ Dry batteries

This unit can be powered by six D size (SUM-1/R20P) manganese dry cell batteries. Weakened batteries will result in lower volume or poor tonal quality. The power indicator lamp will gradually lose its brightness when battery power weakens. At this time, change batteries or shift to one of the alternate power sources mentioned below.

♦ To replace batteries

① Open the battery compartment cover on the bottom of the unit and take out the used batteries.

② Load new batteries taking care that the plus (+) and minus (−) poles are facing in the correct directions.

• *Refer to the specifications for standard battery life.*

PRECAUTIONS

Incorrectly using batteries can cause them to leak or burst, and may damage your product. Note the following precautions:

- Be sure that the plus (+) and minus (−) poles are facing in the correct directions.
- Do not mix battery types.
- Do not mix new batteries with old ones.
- Never leave dead batteries in the battery compartment.
- Remove batteries when not using the product for extended periods.
- The batteries supplied with the unit are not rechargeable.
- Do not expose batteries to direct heat, let them become shorted or try to take them apart.

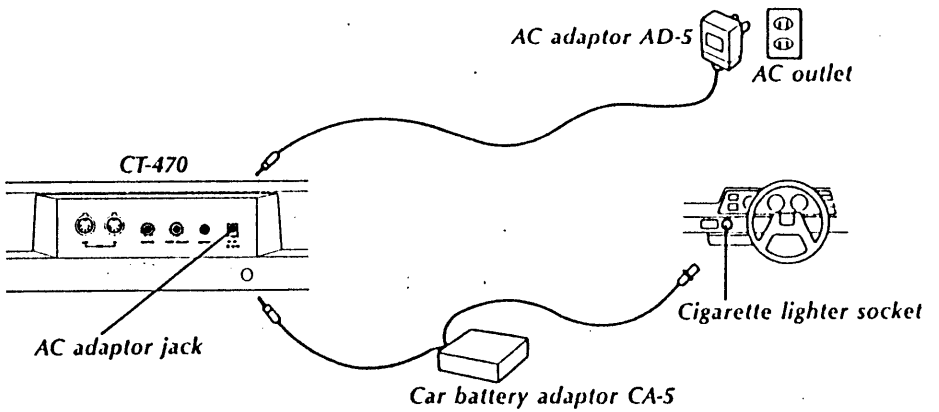
(If a battery leaks, clean out the battery compartment of the product immediately, taking care to avoid letting the battery fluid come into direct contact with your skin.)

♦ Car battery

With the car battery adaptor (CA-5, optional), DC power is supplied from a car battery through the cigarette lighter socket.

■ AC Power

An AC adaptor (AD-5, optional) is required when using household current. Use only a genuine CASIO adaptor with the same voltage rating (100, 117, 220 or 240) as the power supply in your area to prevent damage to internal components. Plug the AC adaptor into the AC outlet and the cord into the unit. This will automatically cut off the battery power supply.



CAUTION

- Use only genuine CASIO adaptors to avoid risk of damage.
- The adaptor may become warm when left connected to an AC outlet. This is normal, but the adaptor should be unplugged when not in use.

3 General Operations

• Refer to the general guide found on page 4-5 for exact locations of this keyboard controls and connections.

■ Getting started

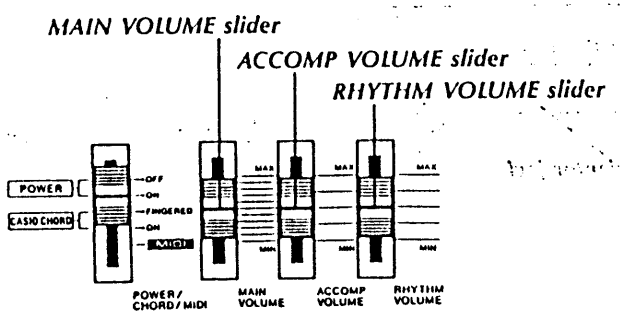
①Set the POWER/CHORD/MIDI selector to ON.
②Adjust the volume level using the MAIN VOLUME slider.
③Select one of the 220 preset tones (see "Preset Tones", page 9).
④Now, start playing.

■ VOLUME sliders

MAIN VOLUME slider:
Adjusts the overall volume of the unit.

ACCOMP VOLUME slider:
Adjusts the volume of the accompaniment pattern.

RHYTHM VOLUME slider:
Adjusts the volume of the auto-rhythm.



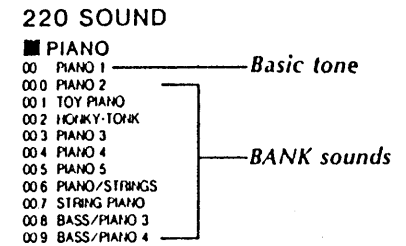
■ Tuning control

You can adjust the pitch of the entire keyboard within ±30 cents using the tuning control on the bottom panel. This allows easy tuning with other instruments.

4 Preset Tones (220-SOUND TONE BANK)

• Refer to the general guide found on page 4-5 for exact locations of this keyboard controls and connections.

This unit features a total of 220 preset tones including 20 *basic tones* and 200 *BANK sounds*.
Look at the 220 SOUND TONE BANK list on the front panel. As you'll notice, the preset tones are divided into 20 groups such as PIANO group, HARPSICHORD group, etc. The basic tones are the representative ones, which appear at the top of the list of each group. You can select the basic tones directly using a TONE selectors. The BANK sounds are variations of each group, which can be selected using the TONE selectors after pressing the TONE BANK button.



■ Selecting a basic tone (tone 00→19)

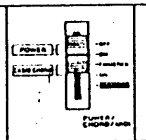
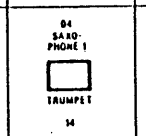
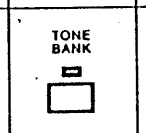
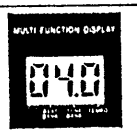
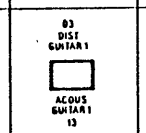
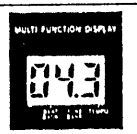
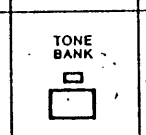
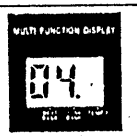
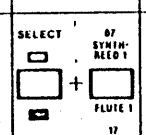
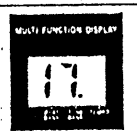
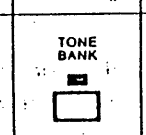
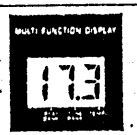
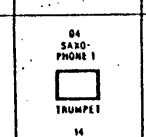
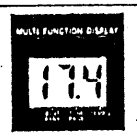
Note that you do not press the TONE BANK button (the indicator above this button is not lit) when selecting a basic tone.
①Specify either the upper or lower row of preset tones by pressing the TONE SELECT button. The indicator above or below this button lights to show the active row.
②Press one of the TONE selectors to choose a preset tone.

• PIANO 1 (tone 00) is automatically selected when the power of the unit is switched ON.

■ Selecting a BANK sound

Look at the 220 SOUND TONE BANK list again. The tones which have 3-digit numbers are BANK sounds. To select a BANK sound, first select the basic tone of the group that contains the BANK sound you want, and then press the TONE BANK button (the indicator above this button lights). Now, you can select the BANK sounds of the group you've selected by pressing a TONE selector.

<Example>
To select OCARINA (tone number 17.4) after selecting BASSOON (tone number 04.3)

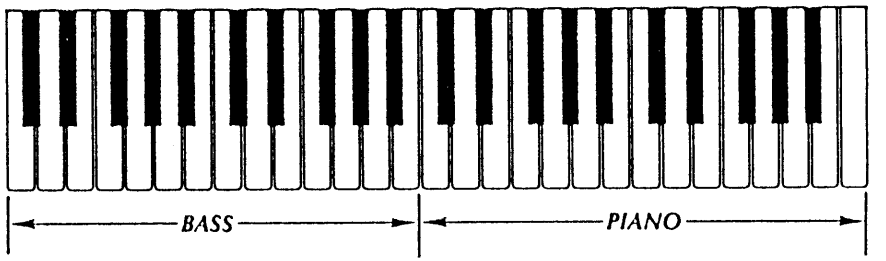
①Set the POWER/CHORD/MIDI selector to ON. PIANO 1 tone (tone 00) is automatically selected.		
②Press TONE selector 4.		
③Press the TONE BANK button. The indicator above this button lights.		
④Press the TONE selector 3. BASSOON is selected now.		
⑤Next, select OCARINA. Press the TONE BANK button.		
⑥Press the TONE SELECT button, and then press TONE selector 7 (now tone 17 is selected).		
⑦Press the TONE BANK button again.		
⑧Press TONE selector 4. Now OCARINA is selected.		

■ Keyboard split tones

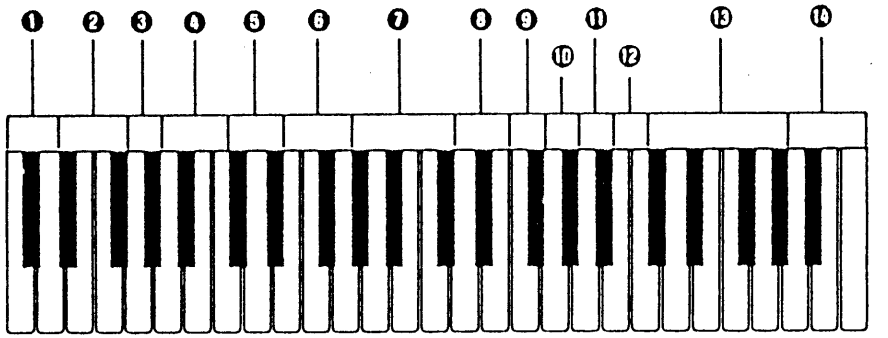
Some of the preset tones split the keyboard and assign two or more sounds. With such a preset tone, the sound produced depends on what position of the keyboard you play. For example, BASS/PIANO 1 (tone 16) puts BASS on the left and PIANO on the right of the keyboard.

<Example>

BASS/PIANO 1 (No. 16)



PERCUSSION 1 (No. 12)

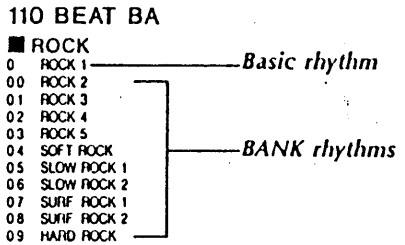


❶ bass drum
❷ snare drum
❸ gated snare drum
❹ closed hi-hat
❺ open hi-hat
❻ crash cymbal
❼ ride symbal
❽ hi tom
❾ mid tom
❿ low tom
⓫ floor tom
⓬ cow bell
⓭ timbales
⓮ maracas

5 Auto-rhythms *(110 BEAT BANK)*

- *Refer to the general guide found on page 4-5 for exact locations of this keyboard controls and connections.*

This unit features a total of 110 rhythm patterns including 10 ***basic rhythms*** and 100 ***BANK rhythms.***
Look at the 110 BEAT BANK list on the front panel. As with preset tones, the rhythm patterns are divided into groups. The basic rhythms at the top of the list for each group are the representative ones. You can directly select the basic rhythms using the BEAT selectors. The BANK rhythms are variations of each group, which can be selected using the BEAT selectors after pressing the BEAT BANK button.



■ Selecting a basic rhythm (rhythm number 0→9)

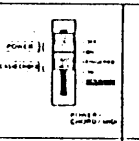
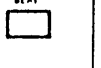
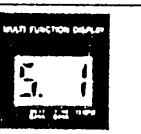
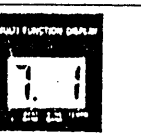
Note that you do not press the BEAT BANK button (the indicator above this button is not lit) when selecting a basic rhythm.
Simply press one of the BEAT selectors.

- *ROCK 1 rhythm (rhythm 0) is automatically selected when the power of the unit is switched ON.*

■ Selecting a BANK rhythm

Look at the 110 BEAT BANK list again. The rhythms which have 2-digit numbers are BANK rhythms. To select a BANK rhythm, first select the basic rhythm of the group that contains the BANK rhythm you want, and then press the BEAT BANK button (the indicator above this button lights). Now, you can select the BANK rhythms in the group you've selected by pressing a BEAT selector.

<Example>
To select BOSSA NOVA (rhythm 7.6) after selecting DISCO (rhythm 5.1)

①Set the POWER/CHORD/MIDI selector to ON. ROCK 1 (rhythm 0) is automatically selected.		
②Press BEAT selector 5.		
③Press the BEAT BANK button. The indicator above this button lights.		
④Press BEAT selector 1. DISCO is selected now.		
⑤Next, select BOSSA NOVA. Press the BEAT BANK button.		
⑥Press BEAT selector 7.		
⑦Press the BEAT BANK button again.		
⑧Press BEAT selector 6. Now BOSSA NOVA is selected.		

■ Playing an auto-rhythm

①After selecting an auto-rhythm, press the START/STOP button to start the rhythm.

②Adjust the tempo using the TEMPO control buttons. Each press of [▲] speeds up the tempo, while pressing [▼] slows it down. The 3-digit display shows the tempo of the rhythm.

- *The tempo of the auto-rhythm can be adjusted between 40 and 256 beats per minute.*

③You can adjust the volume of the rhythm by using the RHYTHM volume slider.

④Press the START/STOP button again to stop auto-rhythm play.

- *You can use the MUSICAL CONTROLLER buttons to start an auto-rhythm with intro pattern, inserting fill-ins to the rhythm, etc. Please refer to page 17, "Using MUSICAL CONTROLLER buttons" for details.*

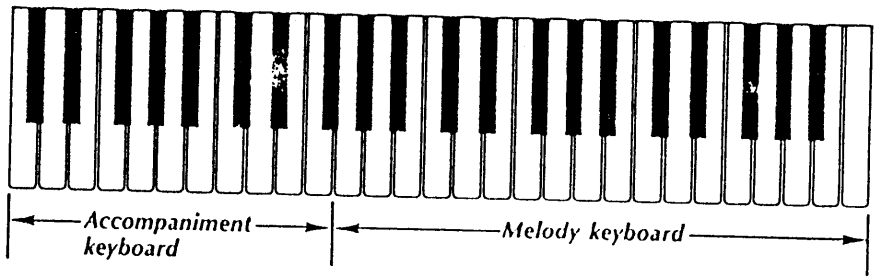
6 Multi-accompaniment system

- *Refer to the general guide found on page 4-5 for exact locations of this keyboard controls and connections.*

This unit features 110 accompaniment patterns that let you enjoy automatic play of full accompaniments to your performances. Five parts, including Rhythm, Bass, Chord 1, Chord 2 and Obbligato add more depth to your music. A set of ORCHESTRATION buttons even lets you switch any of these parts ON and OFF to let you tailor the accompaniment to the music you are playing. In addition, the MUSICAL CONTROLLER buttons also give you full control over the accompaniment patterns, including intro, fill-in and ending.

■ Accompaniment keyboard

If the POWER/CHORD/MIDI selector is set to FINGERED or ON, keys of the lower 1.5 octave of the keyboard become accompaniment keyboard. You can use the accompaniment keyboard keys for auto-accompaniment performance.



■ Playing an accompaniment using CASIO CHORD

①Set the POWER/CHORD/MIDI selector to the ON position.

②Select one of the auto-rhythms (refer to "5. Auto-rhythms" on page 12).

③Start the auto-rhythm by pressing the START/STOP button.

④Play on the accompaniment keyboard keys according to the CASIO CHORD system (refer to "CASIO CHORD system" on page 16). The moment you press an accompaniment keyboard key, the auto-accompaniment pattern starts to play in the rhythm track.

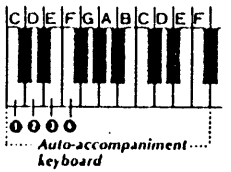
⑤Press the START/STOP button again to stop auto-accompaniment play.

Casio Chord system

The Casio Chord system has been developed so you can play the four main types of chords more easily. Playing of the chords is simplified as shown below:

- Pressing one of the accompaniment keyboard keys produces a major chord corresponding to that note.
- Simultaneously pressing any key to the right (two keys at the same time) results in a minor chord.
- Similarly, pressing one more key to the right (three keys in all) produces a seventh chord, and pressing the fourth key to the right (four keys in all) creates a minor seventh chord.

<Examples>
C (C major chord)—Press ❶.
Cm (C minor chord)—Press ❶, ❷ together.
C7 (C seventh chord)—Press ❶, ❷, ❸ together.
Cm7 (C minor seventh chord)—Press ❶, ❷, ❸, ❹ together.



• Not only ❷, ❸, and ❹, but any black or white keys can be used as long as they are to the right of ❶.

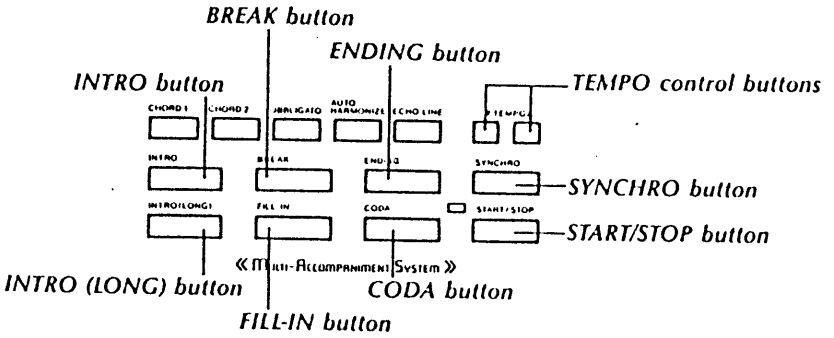
■ Playing an accompaniment using FINGERED CHORD

① Set the POWER/CHORD/MIDI selector to the FINGERED position.
② Select one of the auto-rhythms (refer to "5. Auto-rhythms" on page 12).
③ Start the auto-rhythm by pressing the START/STOP button.
④ Play chords as usual on the accompaniment keyboard keys. The moment you play a chord on the accompaniment keyboard keys, the auto-accompaniment pattern starts to play in the rhythm track.
⑤ Press the START/STOP button again to stop auto-accompaniment play.

• This unit is capable of recognizing the following chords; M, m, −5, +5, dim, sus4, 7, M7, m7, mM7, m7-5, 7sus4, 9, m9.

■ Using the MUSICAL CONTROLLER buttons

The 10 MUSICAL CONTROLLER buttons give you control over the accompaniment patterns. When the POWER/CHORD/MIDI selector is in the FINGERED or ON position, you can control all of the accompaniment patterns. When it is in the OFF position, you can control the rhythm pattern only.



<MUSICAL CONTROLLER buttons>

♦ **INTRO button**
This button inserts a light 1-measure introduction before starting the normal accompaniment pattern.

♦ **INTRO (LONG) button**
This button inserts a 4- to 5- measure introduction before starting the normal accompaniment pattern. The chord progression used in the intro leads into the progression used for the accompaniment. Even if you do not specify an accompaniment keyboard chord when you press this button for an intro, the unit automatically bases the intro on the last chord you played (or on Cmaj if you have switched the unit on and have not yet played a chord).

♦ **BREAK button**
When you press this button during play of an accompaniment, a 1- to 2-measure pattern is inserted, which stops at the beginning of a subsequent pattern.

♦ FILL-IN button
When you press this button during play of an accompaniment, a 1- to 2-measure fill-in pattern is inserted.

♦ ENDING button
When you press this button in place of the START/STOP button to end the accompaniment play, a 2- to 3-measure ending pattern is inserted before accompaniment play is stopped.

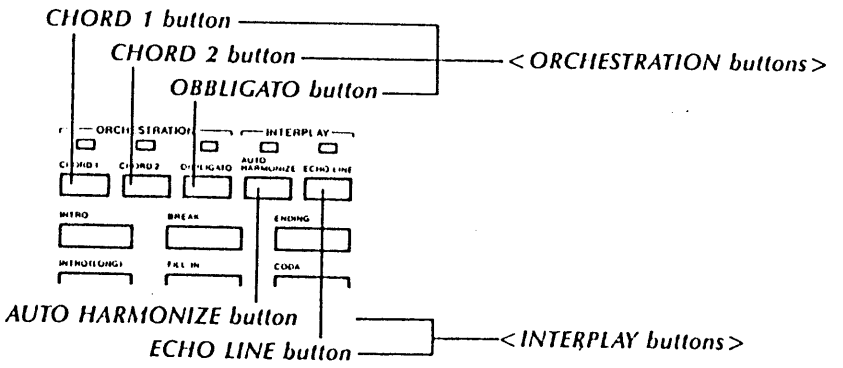
♦ CODA button
When you press this button in place of the START/STOP button to end the accompaniment play, a 4- to 5-measure long ending pattern is inserted before accompaniment play is stopped. The progression of chords used in the ending pattern are based on the chord that is being played when the you press this button.

♦ SYNCHRO button
Press this button, and the unit stands by waiting for you to play a note on the accompaniment keyboard. The selected rhythm pattern begins as soon as you press a key.

■ Using the ORCHESTRATION buttons

The auto-accompaniment patterns produced by this unit consist of 5 different elements; rhythm track, bass line, chord 1 pattern, chord 2 pattern and obbligato. The ORCHESTRATION buttons switch the sound of these elements (except the rhythm and bass line) ON and OFF. For example, if you want only a rhythm track and bass line for your accompaniment, you can turn off the other 3 elements.

ORCHESTRATION buttons:
CHORD 1 button.....switches chord 1 sound on and off.
CHORD 2 button.....switches chord 2 sound on and off.
OBBLIGATO button.....switches obbligato sound on and off.



• *Whenever you set the POWER/CHORD/MIDI selector to FINGERED or ON, CHORD 1 and CHORD 2 buttons are set to on and OBBLIGATO button is set to off automatically.*

■ Using the INTERPLAY buttons

♦ AUTO HARMONIZE button
If this button is depressed during play of an accompaniment pattern, the chord selected on the accompaniment keyboard is automatically harmonized with notes played on the melody keyboard.

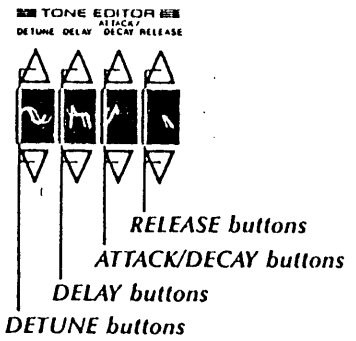
♦ ECHO LINE button
If this button is depressed during play of an accompaniment pattern, notes played on the melody keyboard are automatically echoed, in accordance with the phrasing you use.

• *The AUTO HARMONIZE and ECHO LINE function cannot be selected at the same time.*

7 Tone Editor

• Refer to the general guide found on page 4-5 for exact locations of this keyboard controls and connections.

■ Using the TONE EDITOR buttons



<TONE EDITOR buttons>

♦ DETUNE buttons
You can use the DETUNE buttons to change the tuning of the sounds output from the right channel (right speaker or LINE OUT R), to produce a chorus effect. Each time you press the [▲] button the output is raised 3 cents, up to a maximum of 7 half notes. Use the [▼] button to return to the original tuning.

♦ DELAY buttons
You can use the DELAY buttons to delay the output from the right channel, to produce an echo effect. Use the [▲] button to change the delay, and the [▼] button to return to the original setting.

♦ ATTACK/DECAY buttons
You can use the ATTACK/DECAY buttons to control the attack and decay points of the sound you play. Use the [▲] button to create a later attack and slower decay, and the [▼] button to create a quicker attack and quicker decay.

♦ RELEASE buttons
You can use the RELEASE buttons to control the attenuation of the note you play. Use the [▲] button to create a slower attenuation, and the [▼] button for a quicker attenuation.

8 Performance Memory Function

• Refer to the general guide found on page 4-5 for exact locations of this keyboard controls and connections.

The performance memory function lets you "record" notes as you play them on the keyboard. Up to 1,250 notes can be stored in memory for playback.

■ Recording

① Start an auto-rhythm and adjust the tempo of the recording.
② Press the RECORD button to enter the recording standby mode. The light above the RECORD button flashes.
③ Set the POWER/CHORD/MIDI selector to FINGERED or ON if you want to use auto-accompaniment in your recording. If not, set this switch to OFF.
④ Select the auto-rhythm you like.
- *If you don't want an auto-rhythm in your recording (or if you want to start an auto-rhythm during recording), press the Musical Controller START/STOP button here.*
- *If you want to start an auto-rhythm with intro pattern, press the INTRO button here.*
- *If you want to start an auto-rhythm using synchro start, press the SYNCHRO button here.*

⑤ Press the recording START/STOP button to start recording. Recording starts after one measure of beat count.
⑥ Play the keyboard as you like.
⑦ Press the recording START/STOP button again to stop recording.

♦ Notes on recording

- You can record changes in the following operations as well as keyboard play during recording.
  - Changing preset tones.
  - Changing auto-rhythms.
  - Starting or stopping a rhythm track.
  - Starting a rhythm track using an INTRO pattern.
  - Inserting the FILL-IN patterns of rhythms.
  - Ending the rhythm track with an ENDING pattern.
- Memory capacity is approximately 1,250 notes. Operations such as changes in rhythms and tones are counted as a half-note.
- Recording automatically ends when you exceed the memory capacity.

■ Playing back memory contents

① Press the recording START/STOP button to play back your performance. The light above the RECORD button lights and playback starts.
② Press the recording START/STOP button again to stop playback.

♦ Notes on playback

- You can play the entire keyboard with the playback if the recording was done in the Casio Chord OFF mode. If you recorded in the Casio Chord ON or FINGERED mode, only the melody keyboard can be used.
- All switches and buttons except volume sliders are inoperative during playback.

9 MIDI Functions

• Refer to the general guide found on page 4-5 for exact locations of this keyboard controls and connections.

■ What is MIDI?

"MIDI" stands for "Musical Instrument Digital Interface". Practically speaking, it lets you connect this keyboard to other MIDI-equipped musical instruments and devices, such as synthesizers, drum machines, sequencers, and even personal computers.

♦ MIDI terminal functions

MIDI IN . . . . . Receives external MIDI messages.
MIDI OUT . . . Sends MIDI messages to external devices.

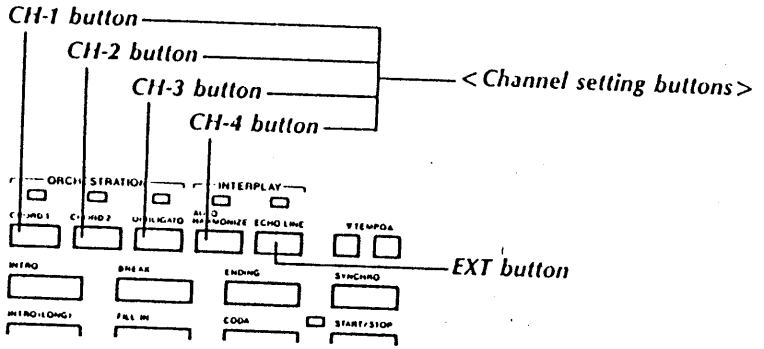
■ CT-470 MIDI settings

♦ Setting the MIDI mode

The CT-470 features 2 different MIDI modes.

MODE A: Single channel MIDI mode
Whenever you set the POWER/CHORD/MIDI selector to MIDI, this unit is set to ***MIDI MODE A*** automatically. In this mode, the CT-470 sends/receives MIDI data using channel 1 only.

MODE B: Multi-timbral mode
The CT-470 is designed for simultaneous receipt of 4 MIDI channels (channel 1 through 4). Channel 1 through 3 can be assigned their own keyboard voices, while channel 4 is used as either the fourth voice or rhythm channel.



Press the CH-1, CH-2 or CH-3 button to enter *MODE B*. You can assign 3 different voices of the CT-470 to channel 1 through 3. At the same time, you can use an auto-rhythm of the unit. In this status, channel 4 can be used to receive program change messages to change auto-rhythm selections of the CT-470, and to send program change messages from the CT-470 using BEAT selectors. If you want to use channel 4 as the fourth voice, press the CH-4 button. The indicator above the CH-4 button lights and you can assign 4 different voices of the CT-470 to channels 1 through 4.
Notice that you cannot use rhythm track of the CT-470 in this setting.

♦ **Setting the MIDI channel**
In MODE B, the MIDI transmit channel can be set between channel 1 and channel 4. Press one of the channel setting buttons to set the transmit channel. One of the indicators above the buttons lights to show which channel is active.

♦ **Assigning preset tones to MIDI channels (MODE B)**
A preset tone can be assigned to each MIDI channel using the following procedure.
① Press the CH-1 button.
② Select one of the preset tones using the TONE selectors (and TONE BANK button, if necessary). The selected tone is assigned to the MIDI channel 1.
③ Repeat the procedure ① and ② for CH-2 and CH-3 (and CH-4, if desired).

• *The tone assigned to each MIDI channel can be altered when the unit receives program change messages from other MIDI keyboards or MIDI devices.*

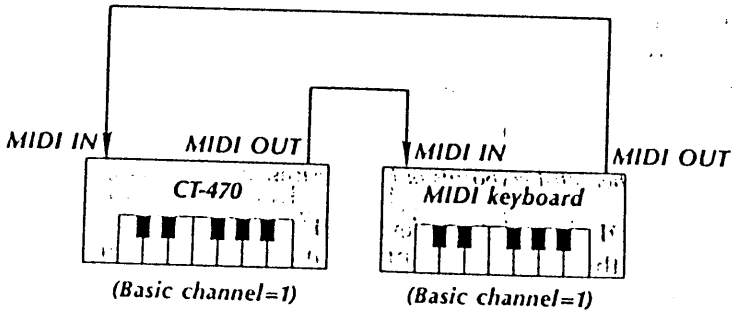
♦ **Setting the MIDI clock (internal/external)**
When you set the POWER/CHORD/MIDI selector to MIDI, the CT-470 is set to internal clock automatically. If you want to set to external clock, simply press the EXT button. The indicator above this button lights to show that the unit is in the external clock mode. Press the EXT button to switch back to the internal clock.

• *After you set channel 4 as the fourth voice, the EXT button becomes inoperative. In this case, set the POWER/CHORD/MIDI selector to any setting other than MIDI and then set to MIDI again.*

♦ **Setting the volume in the MIDI mode**
You can adjust the volume of tones assigned to each MIDI channel using the following controls;
Channel 2/3.....ACCOMP VOLUME slider
Channel 4 (or rhythm).....RHYTHM VOLUME slider

■ CT-470 MIDI applications

♦ Connecting to another MIDI keyboard



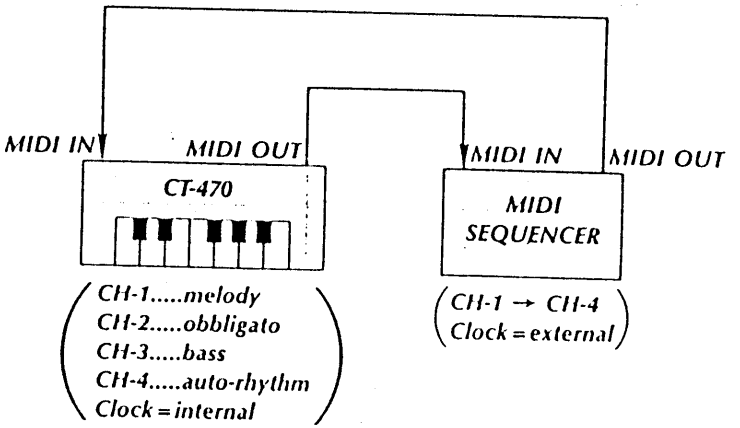
① Set the POWER/CHORD/MIDI selector to MIDI after connecting the devices using MIDI cables. (Note that the CT-470 is set to MIDI MODE A now.)
② Set the basic channel of the connected MIDI keyboard to channel 1. In this configuration, either keyboard can be master or slave. The keyboard on which you play becomes the master. In this setting, the sounds of both keyboards can be played in ensemble to make a "thick" voice or totally new sound.

• *The polyphony of the CT-470 unit is 12-note in the MODE A.*

♦ Use as multi-timbral sound source

By connecting the CT-470 to a multi-track sequencer and setting the CT-470 to multi-timbral mode (MODE B), a single CT-470 unit becomes capable of handling the rhythm, melody, bass and obbligato parts at the same time.

• *In the MODE B, the polyphony of each channel is;*
channel 1=6-note, channel 2=4-note, channel 3=2-note and channel 4=4-note (when used as the fourth voice).



① Set the POWER/CHORD/MIDI selector to MIDI after connecting the devices using MIDI cables.
② Press the CH-1, CH-2 or CH-3 button to enter MIDI MODE B.
③ Program a tune using a multi-track sequencer, assigning the melody part to channel 1, obbligato part to channel 2 and bass part to channel 3, for example.
④ To start the tune with the CT-470's auto-rhythm, press the START/STOP button of the CT-470. Note that the sequencer is set to external clock.
If you want to start the tune with the auto-rhythm from the sequencer, set the sequencer to internal clock and set the CT-470 to external clock (press the EXT button).

• *Instead of using 3 voices plus an auto-rhythm, you can use 4 voices at the same time. Press the CH-4 button of the CT-470 to use channel 4 as the fourth voice. In addition to melody, bass and obbligato you've programmed using 3 channels, you can program a couter melody part using channel 4, for example. Or by assigning one of the PERCUSSION group tones to channel 4, you can even program an original rhythm track.*

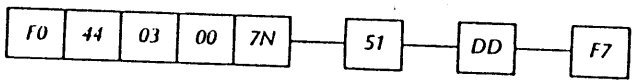
■ Technical reference

♦ Program change reference

1. Tone number and program change number
   CT-470's preset tones correspond to the program change numbers shown in the chart below.

TONE No.		Prog. Change No.
00.	10.	0
↓	↓	↓
09.	19.	9
00.0	10.0	10
↓	↓	↓
00.9	10.9	19
↓	↓	↓
09.9	19.9	109

- *The tone SELECT on/off messages are sent/received as MIDI exclusive messages. The exclusive data format is shown below.*



N (7N) : BASIC CH (N=0→3)
DD : 20....SELECT switch OFF
: 21....SELECT switch ON

2. Beat numbers and program change numbers

BEAT No.	Prog. Change No.
0.	0
↓	↓
9.	9
0.0	10
↓	↓
0.9	19
↓	↓
9.9	109

♦ Polyphony reference

The polyphony of each channel is limited as listed below.

	MODE A	MODE B (i)	MODE B (ii)
CH-1	12 (6)	6 (3)	6 (3)
CH-2	—	4 (2)	4 (2)
CH-3	—	2 (1)	2 (1)
CH-4	—	—	4 (2)

MODE B (i)....When set to internal/external colck.
MODE B (ii)...When channel 4 is used as the fourth voice.

10 Troubleshooting

• *For any malfunction, always check battery condition first. (see page 6-7)*

Trouble	Possible Cause	Remedy
No sound, even if keys are pressed.	1. Main volume turned down. 2. Headphones connected. 3. Auto power off has activated.	1. Turn up main volume. 2. Disconnect headphones. 3. Turn the POWER/CHORD/MIDI selector off and then on again.
No rhythm.	Main and rhythm volume turned down.	Turn up main and rhythm volume.
No accompaniment.	Main and accompaniment volume turned down.	Turn up main and accompaniemnt volume.
Occasional interference.	Refrigerators, washing machines and similar electric appliances.	Use outlet as far away as possible from appliance thought to be the cause.
No sound when connected to external amplifier.	1. Main volume turned down. 2. Defective connection cord.	1. Turn up main volume. 2. Replace connection cord.

11 Care of Your Keyboard

1. **Avoid heat, humidity or direct sunlight.**
   Do not overexpose the unit to direct sunlight, or place near an air conditioner, or in any extremely hot place.

2. **Take care not to drop the unit and avoid strong impact.**
   Strong impact may cause malfunctions. When carrying or transporting the unit, protect the keyboard and switches with soft cloth or other material.

3. **Keep the unit free of liquids, dust, etc.**
   Do not allow foreign matter to get between the keys, especially metallic objects such as hairpins, sewing needles or coins. Also, do not let the unit get wet.

4. **Never attempt to modify any parts of the unit.**
   The unit is a precision instrument, made of electronic parts. Any modification of, or tampering with inner parts may cause malfunction.

5. **Do not use lacquer, thinner or similar chemicals for cleaning.**
   Clean the keyboard with a soft cloth dampened in a weak solution of water and a neutral detergent. (Soak the cloth in the solution and squeeze until it is almost dry.)

12 Specifications

Model:	CT-470
Number of keys:	49
Polyphony:	12-note (Max.)
Preset tones:	220
Auto-rhythms:	110
Multi-accompaniment system:	
• Casio Chord;	ON/FINGERED
• Musical controller;	INTRO, INTRO(LONG), BREAK, FILL-IN, ENDING, CODA
• Orchestration;	CHORD 1, CHORD 2, OBBLIGATO
• Interplay;	AUTO HARMONIZE, ECHO LINE
Built-in effects:	Stereo delay, Stereo panning
Real-time memory:	Up to 1,250 notes
Terminals:	LINE OUT (L/R) [output impedance: 150Ω, output voltage: 3V (RMS)MAX], Sustain jack, Foot Volume jack, AC adaptor jack (DC 9V), MIDI (IN/OUT), headphones jack
Tuning control:	A4=442Hz ± 30 cents
Built-in speakers:	12 cm dia x 2
Auto power off:	Approximately 6 minutes after the last operation
Power source:	3-way AC/DC power source;
• AC:	100, 117, 220, 240V (± 10V), 50/60 Hz, with optional AD-5 AC adaptor
• DC:	6 D size (SUM-1/R20P) manganse dry batteries Battery life: Approximately 6 hours
• Car battery:	Requires optional CA-5 car adaptor
Power consumption:	7W
Dimensions:	959(W) x 331(D) x 105(H)mm 37 3/4"(W) x 13 1/16"(D) x 4 1/8"(H)
Weight:	5.2 kg (11.5lbs) including batteries
Standard accessories:	6 "D" size batteries, score stand, dust cover

Designes and specifications are subject to change without notice.

GUIDELINES LAID DOWN BY FCC RULES FOR USE OF THE UNIT IN THE U.S.A. (not applicable to other areas).

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

..... reorient the receiving antenna
..... relocate the equipment with respect to the receiver
..... move the equipment away from the receiver
..... plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.